



# Solution for Smart Agriculture

## Designing, Developing and Establishing LRI Data Centre, LRI Portal and LRI Decision System in Karnataka State

### Introduction

In order to boost up the agri sector, Government of India (GOI) and various state governments have laid down many schemes for the farmer's welfare, few of which falls under the category of Externally Aided Programs (EAP). Sujala-III, a project funded by World Bank through Watershed Development Department-Karnataka. Sujala-III aimed to strengthen and empower the GOI sponsored Integrated Watershed Management Program (IWMP) & aimed to introduce science based watershed management related activities by deploying centralized ICT platform to enable scientific management of Watershed and Environment for enabling smart agriculture.

### Purpose

- To develop and deploy state-of-the-art centralized ICT platform for the state of Karnataka which could integrate data from multiple sources and provide seamless access of information over user friendly platforms including Web and mobile platforms.
- Expected to facilitate effective usage of the data by farming, scientific community and policy makers for efficient and improved decision making.

### Objective

- Develop and deploy state-of-the-art centralized ICT platform
- Enable farmers and other end users to interact with experts, scientists and decision makers for getting solutions to their queries.
- Installation and Commissioning of GIS infrastructure at LRI partners and PMU Location
- Development/Operationalization of LRI Geo Portal
- Integration with external systems Weather Forecast, Daily Weather data, Market Price Information, BHOOMI (Land Ownership) Data
- Development of Decision Support System
- Development of Mobile Application (iOS & Android)

### Solution

- The proposed solution enables climate smart agriculture using science based Watershed Management.
- The Geo portal will be State-of-the-Art interactive, one stop portal for
  - Access information about data
  - Access information about land, water, watersheds, Weather, Package of Practices and information about various agriculture schemes
  - Decision Support Systems for
    - Soil & Water conservation plan, Crop selection, Land Capability Classification and Nutrient management.

- Surface runoff, Size and location of Farm ponds, Crop water requirement, Water balance and Water budgeting.
  - Above Decision Support System (DSS) will help the planners in designing the projects and improve the economic conditions of farmers through improved productivity.
- Helpdesk for Farmers and stakeholders to access the information.
- About Watershed Development Stakeholders and the line departments
- **LRI Digital Library (LRI DL) :**
  - Store both primary and secondary spatial (GIS, Remote sensing data, Scanned copies) and non-spatial data (all formats of MIS data) electronically.
  - Provide access to populate and publish data and metadata, discover / explore metadata through catalogue service.
- **Geo-Portal**
  - Web based platform used to find and access geographic information and associated geographic services via the Internet.
  - Provide a single point of access for searching for and downloading GIS data.
- **Decision Support System (DSS) :**
  - Computerized information system used to support decision-making in an organization or a business integrated with a geographic information system(GIS).
  - Library of potential models will be used to forecast the possible outcomes of decisions; and an interface to aid the user interaction with the computer system to assist in analysis of outcomes.
- **Advisory to Farmers:**
  - Crop suitability: Suitability of crops on priority basis for a particular farmer's survey number. Output will be disseminated to the farmer.
  - Nutrient management: Customized fertilizer recommendation to the farmer for the land parcel based on the crop grown. Output will be disseminated to the farmer.
  - Pest / Disease identification and Recommendation: System will identify the pest/disease based on the photographs sent by the farmer and advisories are provided for plant protection.
  - Market Price Information: Market prices of various commodities in the nearby markets will be displayed.
  - Agro Climatic Features: Enables the user to access the Agro Climatic features.
  - Soil Health: Enables the user to access the Soil Health application of LRI Geo Portal.
  - Soil Testing Labs: Enables the user to view list of Soil Testing Laboratories.
  - Seeds: Enables the user to access the Seed application of Department of Agriculture.

## Challenges

- Assimilation of enormous data (spatial & non-spatial) at a single location.
- This was resolved with the help of LRI data generating partners.

## Benefits

- 2400 watershed data integrated onto one single portal
- DSS enabled real -time monitoring of crop growth & health
- Optimized used of fertilizer, water utilization for any crop at any stage
- Common operational platform providing actionable intelligence and situational awareness to all its stakeholders like Farmers, Hydrologists and Environmentalists.

## Key Project Highlights

- World Bank funded & Integrated Watershed Management Program
- Land Resource Inventory (LRI) Enterprise Geoportal
- LRI decision support system (DSS): 9 modules
- Mobile application
- Farmer advisory services

